NAME: DATE:

Unit-2 Mastery Assessment (version 641)

Question 1 (10 points)

Let f represent a function. If $f[42] = 12$, then there exists a knowable solution to the equation below.

$$y = 2 \cdot (f[8x + 18] + 10)$$

Find the solution.

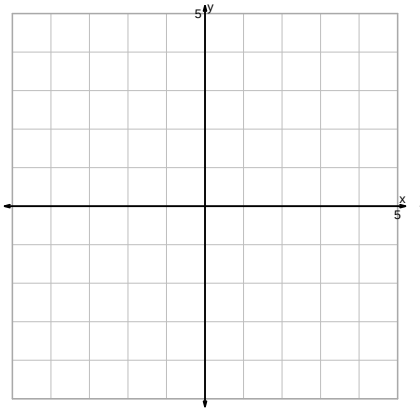
$x =$

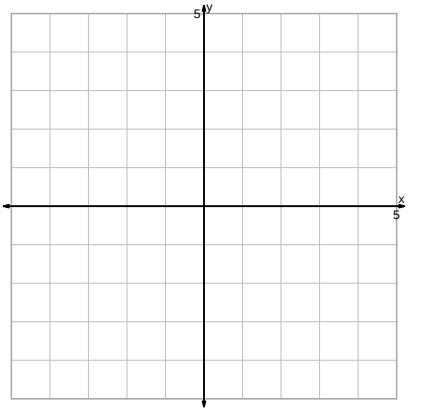
$y =$

Question 2 (20 points)

Graph the equations accurately. For each integer-integer point on the parent, indicate the corresponding point precisely. Also, with dashed lines, indicate any asymptotes.

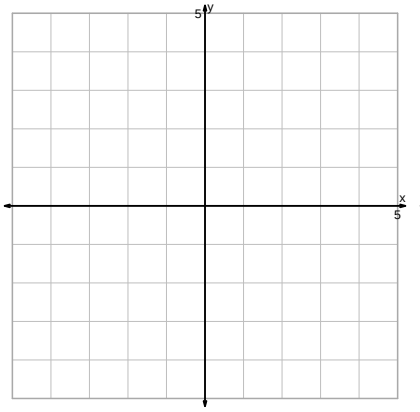
$y = -\log_2(x)$

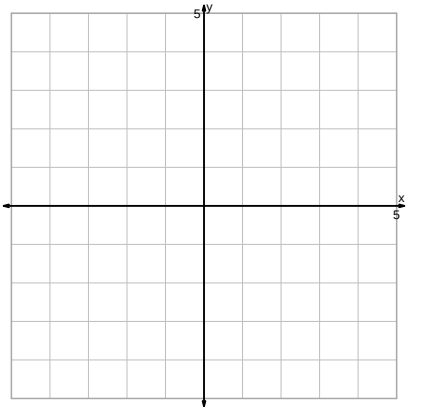




$y = \sqrt[3]{x} + 2$

$y = (x - 2)^2$

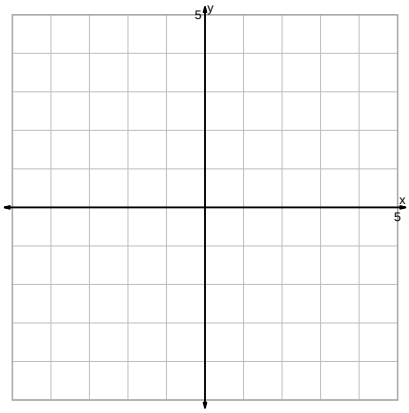


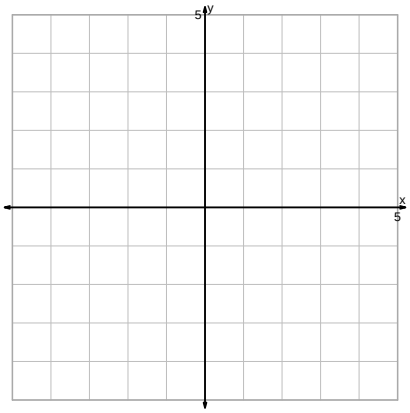


$y = 2 \cdot x^2$

Question 2 continued...

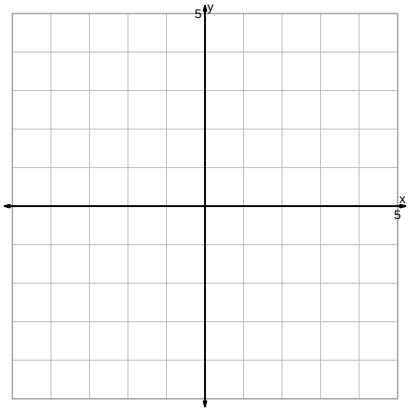
$y = 2^{2x}$

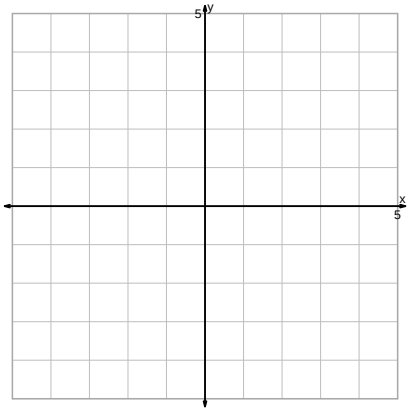




$y = \frac{\sqrt[3]{x}}{2}$

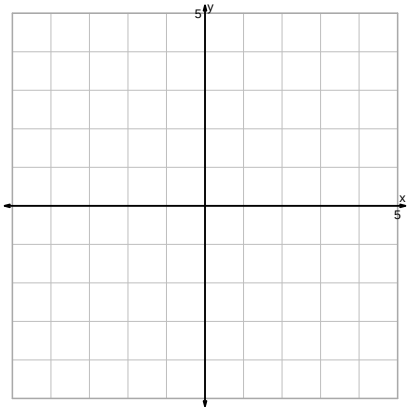
$y = (x+2)^3$

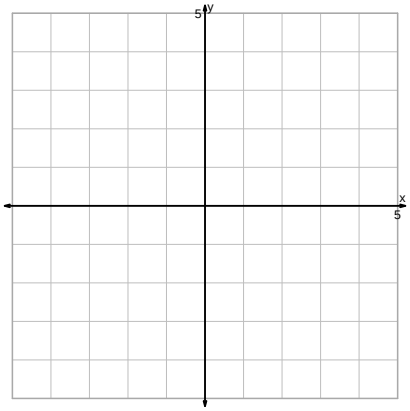




$y = \log_2\left(\frac{x}{2}\right)$

$y = \sqrt{x} - 2$

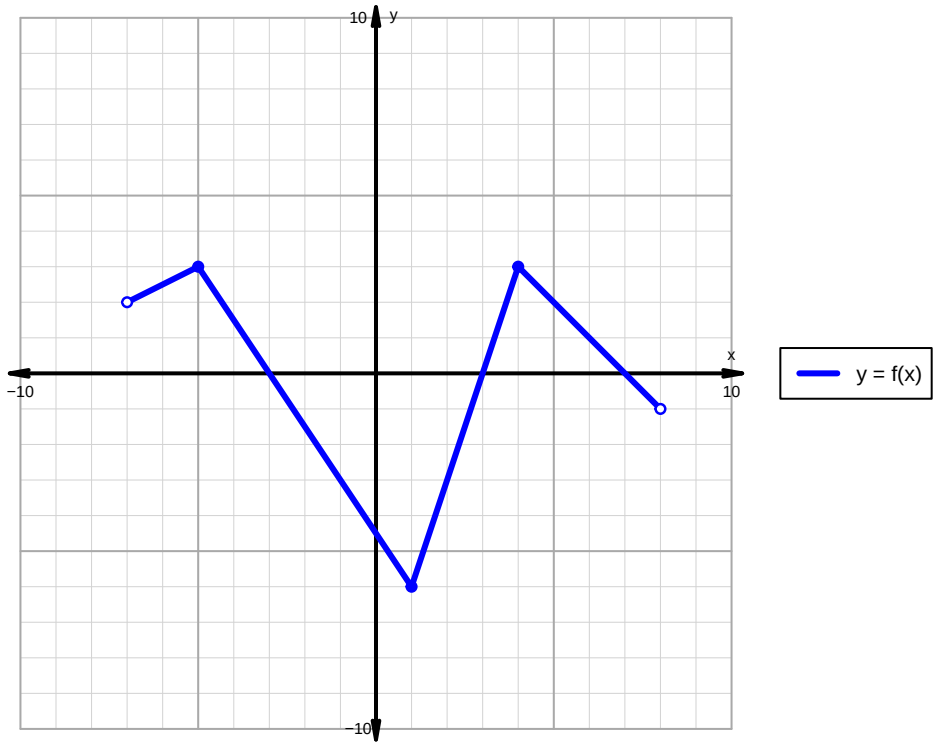




$y = \sqrt{-x}$

Question 3 (20 points)

A function is graphed below.



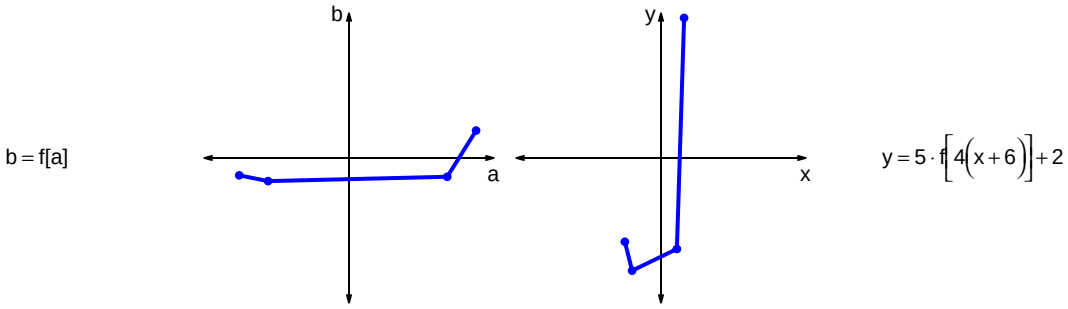
Indicate the following intervals using interval notation.

Feature	Where
Positive	
Negative	
Increasing	
Decreasing	
Domain	
Range	

Question 4 (20 points)

Let f represent a function. The curves $b = f[a]$ and $y = 5 \cdot f[4\,(x + 6)] + 2$ are represented below in a table and on graphs.

a	b	x	y
-76	-12	-25	-58
-56	-16	-20	-78
68	-13	11	-63
88	19	16	97



a. Write formulas for calculating x from a and calculating y from b. (Or, write the coordinate transformation formula.)

b. What geometric transformations (using words like translation, stretch, and shrink), and in what order, would transform the first curve $y = f[x]$ into the second curve $y = 5 \cdot f[4\,(x + 6)] + 2$?

Question 5 (10 points)

A parent square-root function is transformed in the following ways:

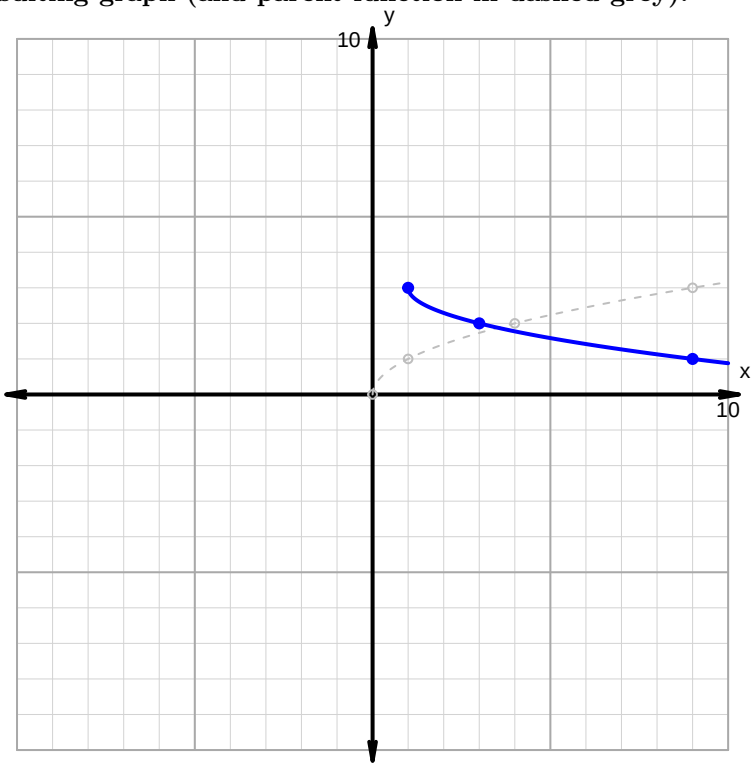
Horizontal transformations

1. Horizontal stretch by factor 2.
2. Translate right by distance 1.

Vertical transformations

1. Translate down by distance 3.
2. Vertical reflection over x axis.

Resulting graph (and parent function in dashed grey):

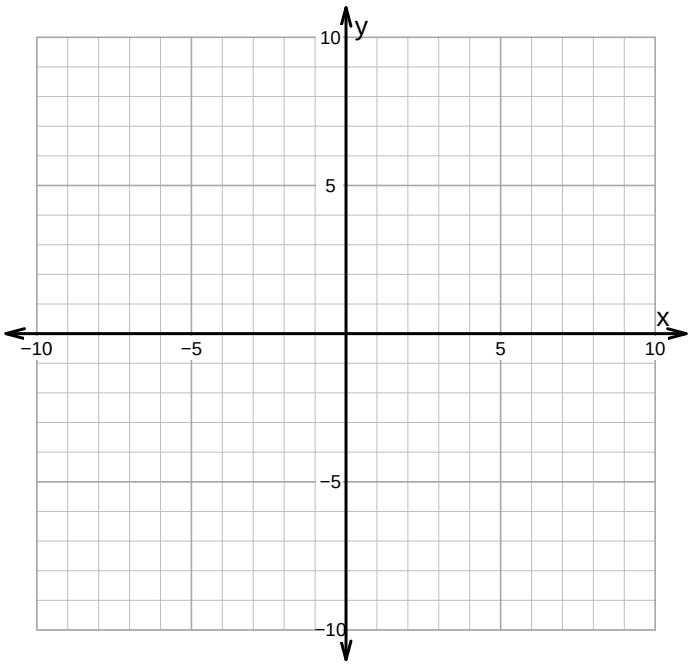


- What is the equation for the curve shown above?

Question 6 (20 points)

Make an accurate graph, and describe locations of features.

$$y = \frac{1}{2} \cdot |x + 5| - 2$$



Feature	Where
Domain	
Range	
Positive	
Negative	
Increasing	
Decreasing	